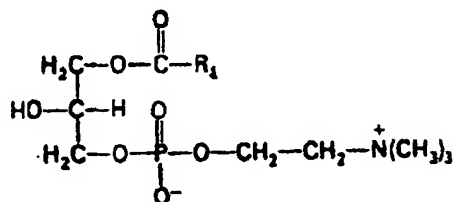


**WHAT IS CLAIMED IS:**

1. A method for inducing neutrophil apoptosis in cells, tissues or a body, comprising administering an agonist ligand specific to G2A receptor into the cells, tissues or body in an amount effective to induce neutrophil apoptosis.

2. The method of claim 1, characterized in that said ligand is selected from the group consisting of

a) LPC (lysophosphatidylcholine) represented by the following formula I :

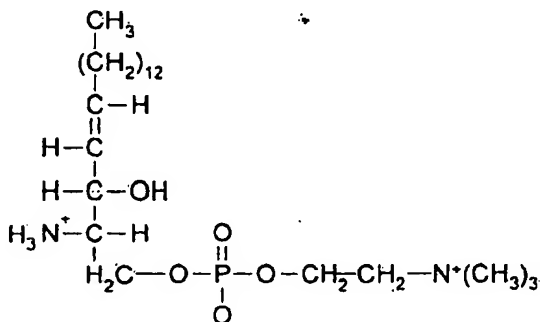


( I )

wherein R<sub>1</sub> is an alkyl of C<sub>4-30</sub> or an alkenyl of C<sub>4-30</sub> having one or more double bonds;

b) SPC (sphingosylphosphorylcholine) represented by the following formula

II :

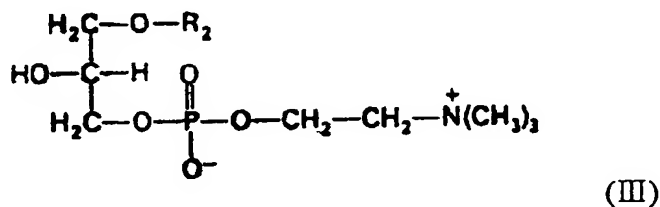


( II ); and

c) derivatives thereof.

3. The method of claim 2, characterized in that said LPC is selected from the group consisting of 1-stearoyl lysophosphatidylcholine ( $L^{\alpha}$ -Lysophosphatidylcholine stearoyl; Lysolecithin stearoyl), 1-oleoyl lysophosphatidylcholine ( $L^{\alpha}$ -Lysophosphatidylcholine oleoyl; Lysolecithin oleoyl), 1-myristoyl lysophosphatidylcholine ( $L^{\alpha}$ -Lysophosphatidylcholine myristoyl), and 1-palmitoyl lysophosphatidylcholine ( $L^{\alpha}$ -Lysophosphatidylcholine palmitoyl; Lysolecithin palmitoyl;  $DL^{\alpha}$ -Lysophosphatidylcholine palmitoyl).

4. The method of claim 2, characterized in that said derivatives are ether derivatives of LPC represented by the following formula III:



wherein  $\text{R}_2$  is an alkyl of  $\text{C}_{4-30}$  or an alkenyl of  $\text{C}_{4-30}$  having one or more double bonds.

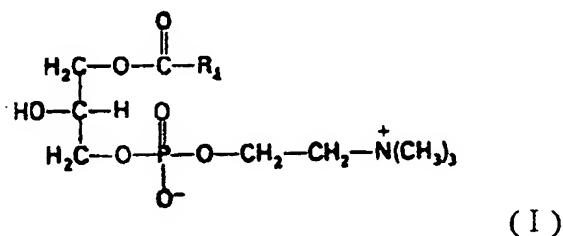
5. The method of claim 4, characterized in that said ether derivatives of LPC are selected from the group consisting of  $L^{\alpha}$ -lysophosphatidylcholine- $\gamma$ -O-alk-1-enyl (Lysophosphatidylcholine),  $L^{\alpha}$ -lysophosphatidylcholine- $\gamma$ -O-alkyl (Lyso-platelet activating factor),  $DL^{\alpha}$ -lysophosphatidylcholine- $\gamma$ -O-hexadecyl (rac-Lyso-platelet activating factor), and  $L^{\alpha}$ -lysophosphatidylcholine- $\gamma$ -O-hexadecyl (Lyso-platelet activating factor; Lyso-PAF- $\text{C}_{16}$ ).

6. A method for inhibiting release of IL-8 in cells, tissues or a body, comprising administering an agonist ligand specific to G2A receptor into the cells, tissues or body in an amount effective to inhibit release of IL-8.

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7. The method of claim 6, characterized in that said ligand is selected from the group consisting of

a) LPC (lysophosphatidylcholine) represented by the following formula I :

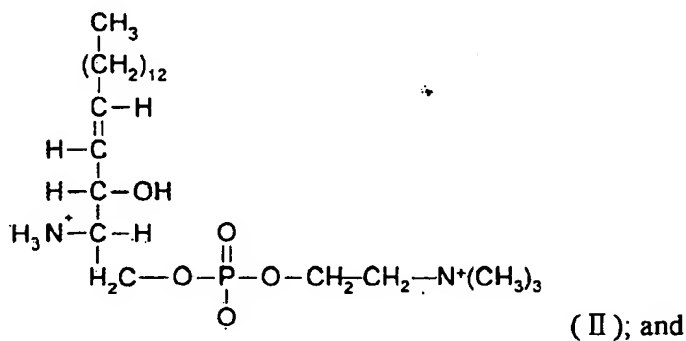


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wherein  $\text{R}_1$  is an alkyl of  $\text{C}_{4-30}$  or an alkenyl of  $\text{C}_{4-30}$  having one or more double bonds;

b) SPC (sphingosylphosphorylcholine) represented by the following formula

II :

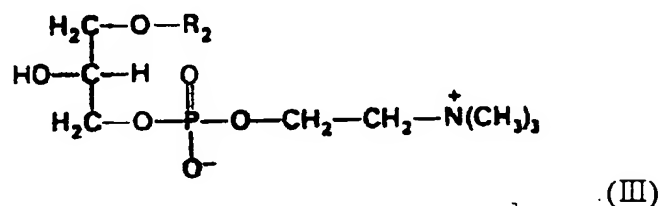


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c) derivatives thereof.

8. The method of claim 7, characterized in that said LPC is selected from the group consisting of 1-stearoyl lysophosphatidylcholine ( $L\text{-}\alpha$  - Lysophosphatidylcholine stearoyl; Lysolecithin stearoyl), 1-oleoyl lysophosphatidylcholine ( $L\text{-}\alpha$  -Lysophosphatidylcholine oleoyl; Lysolecithin oleoyl),  
 5 1-myristoyl lysophosphatidylcholine ( $L\text{-}\alpha$  -Lysophosphatidylcholine myristoyl), and 1-palmitoyl lysophosphatidylcholine ( $L\text{-}\alpha$  -Lysophosphatidylcholine palmitoyl; Lysolecithin palmitoyl;  $DL\text{-}\alpha$  -Lysophosphatidylcholine palmitoyl).

9. The method of claim 7, characterized in that said derivatives are ether  
 10 derivatives of LPC represented by the following formula III:



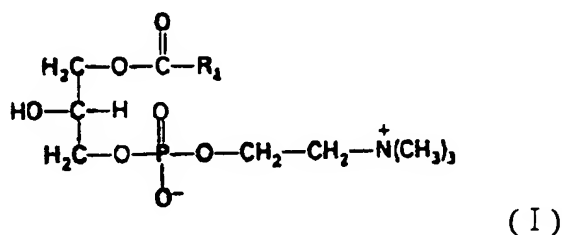
wherein  $\text{R}_2$  is an alkyl of  $\text{C}_{4-30}$  or an alkenyl of  $\text{C}_{4-30}$  having one or more double bonds:

10. The method of claim 9, characterized in that said ether derivatives of  
 15 LPC are selected from the group consisting of  $L\text{-}\alpha$  -lysophosphatidylcholine- $\gamma$  -O-alk-1-enyl (Lysophosphatidylcholine),  $L\text{-}\alpha$  -lysophosphatidylcholine- $\gamma$  -O-alkyl (Lyso-platelet activating factor),  $DL\text{-}\alpha$  -lysophosphatidylcholine- $\gamma$  -O-hexadecyl (rac-Lyso-platelet activating factor), and  $L\text{-}\alpha$  -lysophosphatidylcholine- $\gamma$  -O-hexadecyl (Lyso-  
 20 platelet activating factor; Lyso-PAF- $\text{C}_{16}$ ).

11. A method for treating or preventing a disease or disorder associated with suppression of neutrophil apoptosis or excessive release of IL-8 in a subject, comprising administering an agonist ligand specific to G2A receptor into the subject.

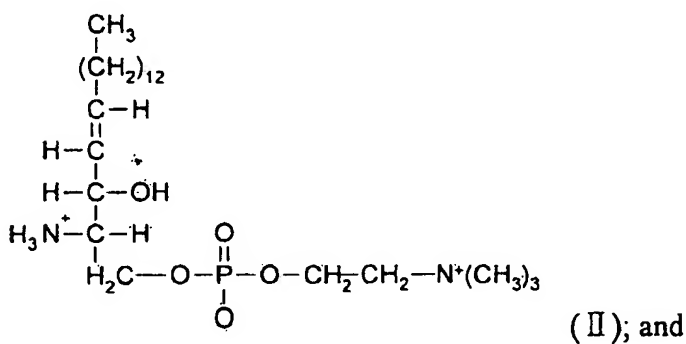
5 12. The method of claim 11, characterized in that said ligand is selected from the group consisting of

a) LPC (lysophosphatidylcholine) represented by the following formula I :



10 wherein R<sub>1</sub> is an alkyl of C<sub>4-30</sub> or an alkenyl of C<sub>4-30</sub> having one or more double bonds;

b) SPC (sphingosylphosphorylcholine) represented by the following formula II :



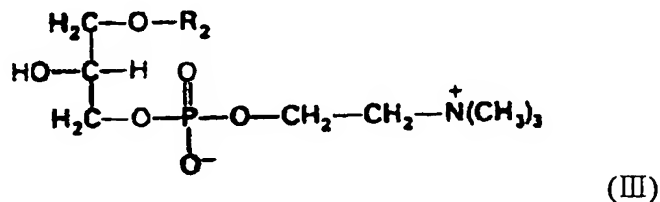
c) derivatives thereof.

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13. The method of claim 12, characterized in that said LPC is selected from

the group consisting of 1-stearoyl lysophosphatidylcholine ( $L-\alpha$ -  
 Lysophosphatidylcholine stearoyl; Lysolecithin stearoyl), 1-oleoyl  
 lysophosphatidylcholine ( $L-\alpha$ -Lysophosphatidylcholine oleoyl; Lysolecithin oleoyl),  
 1-myristoyl lysophosphatidylcholine ( $L-\alpha$ -Lysophosphatidylcholine myristoyl), and 1-  
 5 palmitoyl lysophosphatidylcholine ( $L-\alpha$ -Lysophosphatidylcholine palmitoyl;  
 Lysolecithin palmitoyl and  $DL-\alpha$ -Lysophosphatidylcholine palmitoyl).

14. The method of claim 12, characterized in that said derivatives are ether  
 derivatives of LPC represented by the following formula III:



wherein  $\text{R}_2$  is an alkyl of  $\text{C}_{4-30}$  or an alkenyl of  $\text{C}_{4-30}$  having one or more  
 double bonds.

15. The method of claim 14, characterized in that said ether derivatives of  
 LPC are selected from the group consisting of  $L-\alpha$ -lysophosphatidylcholine- $\gamma$ -O-alk-  
 1-enyl (Lysophosphatidylcholine),  $L-\alpha$ -lysophosphatidylcholine- $\gamma$ -O-alkyl (Lyso-  
 platelet activating factor),  $DL-\alpha$ -lysophosphatidylcholine- $\gamma$ -O-hexadecyl (rac-Lyso-  
 platelet activating factor), and  $L-\alpha$ -lysophosphatidylcholine- $\gamma$ -O-hexadecyl (Lyso-  
 platelet activating factor; Lyso-PAF- $\text{C}_{16}$ ).

16. The method of claim 11, characterized in that said disease is an

inflammatory disease.

17. The method of claim 16, characterized in that said inflammatory disease is selected from the group consisting of inflammatory bowel disease, peritonitis, osteomyelitis, cellulitis, meningitis, cerebritis, pancreatitis, trauma-inducing shock, 5 bronchial asthma, allergic rhinitis, cystic fibrosis, cerebral apoplexy, acute bronchitis, chronic bronchitis, acute bronchiolitis, chronic bronchiolitis, osteoarthritis, gout, spinal arthropathy, ankylosing spondylitis, Reiter's syndrome, psoriatic arthropathy, enteropathic spondylitis, juvenile arthropathy, juvenile ankylosing spondylitis, 10 reactive arthropathy, infectious arthritis, post-infectious arthritis, gonococcal arthritis, tuberculous arthritis, viral arthritis, fungal arthritis, syphilitic arthritis, Lyme disease, arthritis associated with 'vasculitis syndrome', polyarteritis nodosa, hypersensitivity vasculitis, Wegener's granulomatosis, polymyalgia rheumatica, giant cell arteritis, calcium crystal deposition arthropathy, pseudogout, non-joint rheumatism, bursitis, 15 tenosynovitis, epicondylitis (tennis elbow), neuropathic joint disease, hemarthrosis, Henoch-Schonlein purpura, hypertrophic osteoarthritis, multicentric reticulohistiocytoma, scoliosis, hemochromatosis, hemoglobinopathy, hyperlipoproteinemia, hypogammaglobulinaemia, familial mediterranean fever, Gerhardt Disease, systemic lupus erythematosus, relapsing fever, psoriasis, multiple 20 sclerosis, sepsis, septic shock, acute respiratory distress syndrome, multiple organ dysfunction syndrome, chronic obstructive pulmonary disease, rheumatic arthritis, acute lung injury and bronchopulmonary dysplasia.

18. The method of claim 11, characterized in that said disease is ischemia-

reperfusion injury.

19. A method for increasing bactericidal activity of neutrophils in cells, tissues or a body, comprising administering an agonist ligand specific to G2A receptor into the cells, tissues or body in an amount effective to increase bactericidal activity of neutrophils.

20. A pharmaceutical composition for inducing neutrophil apoptosis comprising an agonist ligand specific to G2A receptor as an active ingredient.

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21. A pharmaceutical composition for inhibiting release of IL-8 comprising an agonist ligand specific to G2A receptor as an active ingredient.

22. A composition for treating or preventing a disease or disorder associated with suppression of neutrophil apoptosis or excessive release of IL-8, comprising an agonist ligand specific to G2A receptor as an active ingredient.

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23. Use of an agonist ligand specific to G2A receptor for the manufacture of a pharmaceutical composition for inducing neutrophil apoptosis in cells, tissues or a body.

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24. Use of an agonist ligand specific to G2A receptor for the manufacture of a pharmaceutical composition for inhibiting release of IL-8 in cells, tissues or a body.



25. Use of an agonist ligand specific to G2A receptor for the manufacture of an agent for treating a disease or disorder associated with suppression of neutrophil apoptosis or excessive release of IL-8.